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Poverty Impacts of a WTO Agreement: Synthesis and Overview

by

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1. Introduction and Motivation

International trade is arguably the most direct economic means by which rich countries influence poor countries. Exports of manufactures by developing countries have increased rapidly over the last 30 years, due in part to falling tariffs in the OECD as well as developing countries, declining transport costs, increased specialization, and sustained economic growth. Whereas manufactures accounted for just 25% of developing country exports in 1965, this share subsequently tripled to nearly 75% over the next three decades, while agriculture's share of developing country exports has fallen from 50% to under 10% (Hertel and Martin, 2000). Increased manufactures trade has benefited many developing countries, helping them make the transition out of agriculture, and lifting many out of poverty.

Some of the poorest developing countries, however, have gained relatively little from increased manufactures trade. Market access for their most competitive manufactured export remains highly restricted (apparel), as it does for their key source of employment and exports, farming, and the problem with agricultural exports is exacerbated by the massive government subsidies provided to OECD farmers. Turning to poverty within the poorest countries, developed-country agricultural policies become even more central. A majority of the poor are concentrated in rural areas, where agriculture is usually the main source of economic activity (World Bank Development Prospects Group, 2004), and in the poorest developing countries, large shares of households (including most of the very poorest) depend on self-employment in agriculture for virtually all of their income (Hertel et al., 2004b). Together, these facts

highlight the potential influence that multilateral trade policies can have on poverty in developing countries.

The Doha Development Agenda (DDA) negotiations, sponsored by the World Trade Organization, experienced a severe blow in Cancun, Mexico, precisely over the question of rich country agricultural support and its potential impacts on poverty in developing countries. The Doha negotiations are now emphasizing the need to better understand the linkages between trade policies – particularly in rich countries – and poverty in the developing world. Moreover, poverty reduction is now widely accepted as a central focus for development efforts and has become the main mission of the World Bank and other development institutions. For example, the "Millennium Development Goals" commit the international community to halve poverty by 2015, and locate several key means to this goal in international trade.

With this high level of policy interest, it is hardly surprising that the issue of trade and developing-country poverty has become a focus of much research activity over the last several years. This book contributes to this literature by offering the first comprehensive analysis of the national poverty impacts of specific policy reforms proposed under the auspices of the WTO. To do so, it combines the results from several strands of research in a novel way. First, it draws on an intensive analysis of the July 2004 DDA Framework Agreement, particularly of potential reforms in agriculture, which, as we shall see, have special significance to the poor. The scenarios we analyze below are built up from newly available tariff line data on bound and applied tariff rates. Similarly detailed analysis is undertaken in the case of domestic support for agriculture and export subsidies, as well as for non-agricultural market access.

Second, the research assesses the implications of these alternative Doha scenarios for world markets. These are established using a state-of-the-art, global modeling framework which incorporates the most recent econometric evidence on supply and demand elasticities – with particularly close attention paid to food and agriculture markets which prove crucial in assessing the poverty impacts of the DDA. The outputs of this part of the project include export and import price changes for each region of the world, along with changes in export volumes.

Third, these world trade impacts form the basis for analyzing the poverty impacts of the DDA on eleven individual countries by way of thirteen case studies. These case studies use a variety of innovative techniques to establish the potential impacts of the DDA on different household groups and, in some cases, different regions within the country. The focus countries are: Bangladesh, Brazil (2 studies), Cameroon, China (2 studies), Indonesia, Mexico, Mozambique, Philippines, Russia, Vietnam and Zambia.

2. Choice of Methodologies

In organizing the research underpinning this volume, we had two contrasting objectives. On the one hand, we wanted the studies to be consistent with one another in order to ensure an accurate global assessment of the DDA, as well as comparability across studies. On the other hand, research into the poverty impacts of trade reform is new, and almost the only consensus it has reached is that countries differ. From this perspective, we wanted both to encourage a variety of approaches at the country level and to exploit the specific skills and knowledge of case-study authors to gear their country models most closely to local characteristics and issues.

The project, therefore, is a composite in which the global analysis – the methodology for deriving the global findings and passing them over to the national case studies – is unique and consistent with current standards in the field of quantitative trade policy analysis, while the country case studies display a wide range of methodological innovations and topical design features. This variety has been fruitful, with different country studies emphasizing alternative links between trade and poverty and providing a diversity of insights. Nevertheless, as a check and in order to permit us to draw some broader conclusions, we have included two more uniform exercises: first, a 15 country cross-section analysis, in which a common, fully integrated trade-poverty analysis is provided for a range of developing countries. Second, we have included a global analysis of aggregate poverty impacts derived by applying simple poverty elasticities to the predicted outcomes for developing countries in a global simulation of a prospective Doha agreement.

In most of this book we employ the methodology known as Computable General Equilibrium (CGE) analysis. This is the dominant methodology for the *ex ante* analysis of the economic consequences of comprehensive trade agreements – be they multilateral or bilateral in nature (Shiells and Francois, 1994). The reason for this dominance is that no other approach offers the same flexibility for looking at prospective changes in trade policy, while respecting the fundamental economy-wide consistency requirements such as balance of payments equilibrium and labor and capital market constraints that are so important in determining the consequences of comprehensive trade reforms. The CGE approach has come under substantial criticism (e.g., from Jorgenson, 1984; McKitrick, 1998; Kehoe, 2005) for having insufficient econometric underpinnings, and for not being

adequately validated. Accordingly, in this volume we offer a number of econometric-based analyses that focus on key dimensions of the trade and poverty question, including: price transmission from the border to households, cropping choices by farm households, labor market participation decisions, and the intersectoral movement of labor. In addition, when we assess the global market impacts, we use a CGE model based on the most recent econometric evidence on supply and demand elasticities and for which some (modest) validation has been undertaken.

In the end, it must be said that this project has proved to be a very ambitious undertaking – attempting to bridge micro-based research focusing on the choices and opportunities facing individual households in developing countries with macro-based research on the global impacts of multilateral trade policy reform. The payoff to this exercise must be judged by the insights offered. And it is to these that we now turn.

3. The Global Impact of the Doha Agenda

Chapter 2 of this book by Kym Anderson and Will Martin takes as its starting point the July WTO Framework Agreement for the Doha Agenda. It explores the issues flowing out of this document – and in particular the annexes dealing with export subsidies, domestic support and market access in agriculture, and market access for non-agricultural goods. It explores seven different Doha scenarios, of which we adopt one as the core scenario for this book: Doha-SDT (Special and Differential Treatment for developing countries). We also examine a full liberalization scenario (Full-Lib) as a benchmark indicating the maximum possible impact of trade policy reform on poverty. The most important finding from Chapter 2 is that, unless the Doha Agenda is

considerably more ambitious than the Uruguay Round in terms of depth of cuts in bound tariffs and domestic support, it will achieve little development stimulus. The main problem on the market access side is binding overhang. For example, in agriculture – one of the key areas of the Doha Agenda with respect to trade and poverty – bound tariffs in developing countries average 48% while applied tariffs average are only 21%. In the case of the least developed countries, the respective figures are 78% and 13%! Even in the EU (21% binding vs. 12% applied) and USA (6% binding vs. 3% applied) there is substantial binding overhang in agriculture. So for many products, bound tariffs can be cut deeply with no impact on applied protection and hence international trade.

In the case of domestic support, there is also a problem of bound vs. applied protection, with bindings generally much higher than applied Aggregate Market Support (AMS). But even more severe is the definition of the AMS itself – in particular its reliance on administered prices as a benchmark. This feature makes it possible for administrators in some countries to bring programs into compliance with the stroke of a pen – simply by abolishing the administered price!

Export subsidies are the one area where bold cuts (full elimination) are on the table, but these have diminished in importance over time. Now they remain a significant factor only in the case of the EU (and in the US for dairy products) – and the abolition of export subsidies has been made conditional on equivalent treatment of food aid and state-trading. Preliminary estimates suggest that reform of the latter two items will have little impact, but the linking of these features to the WTO negotiations makes the whole process much more complex.

A key premise of this book is that negotiators will indeed honor their initial vision as set forth in Doha and make significant cuts in agricultural protection in order to put Development back into the Doha Agenda. Presuming they are willing to do so – what impact might this have on poverty?

We begin with the impact of the Doha reforms on world market prices. In Chapter 3 Thomas Hertel and Maros Ivanic utilize a global computable general equilibrium model to assess the potential impact on world market prices and trade volumes of three alternative trade reforms. As established previously in Chapter 2, agricultural protection is central to any assessment of global trade reform and the analysis in Chapter 3 bears this out. The trade reform scenarios invariably have the biggest impact on prices and trade volumes for farm and food products, followed by textiles and apparel. Given the predominance of the poor in rural areas and their heavy reliance on unskilled wages elsewhere, these are the key industries when it comes to any poverty assessment. The strongest world price increases are for the heavily subsidized farm products: rice and other grains, cotton, dairy products and beef. The ranking of the price rises depends on the composition of cuts – both across the three sets of agricultural distortions and across countries. The other important point made in this chapter is that, given the increasingly differentiated nature of traded products, there is no one "world price" and careful attention must be paid to bilateral patterns of trade and country-specific price changes.

Finally, Chapter 3 outlines the methodology for transmitting the price and volume changes to the national case studies. This represents an important innovation in the linking of global economic outcomes with national impacts.

4. Price Transmission

Our analysis of the country case studies is structured around the conceptual framework laid out by Winters (2002) and Winters, McCulloch and McKay (2004). This begins with the question of price transmission – namely how much of the world price shock is transmitted to producers and consumers?

With a majority of the poor in most countries located in rural areas – often poorly served by transportation and communication infrastructure, it is important to ask whether developments in global markets will really have an impact on these households. Of course, this is an empirical question, subject to econometric investigation, and this is precisely what Alessandro Nicita does in Chapter 4 for the case of Mexico. He shows that indeed world prices are differentially transmitted to the regions of the country, depending on their distance from the border and the nature of the commodity in question. He begins his analysis by examining the extent of "pass-through" from international prices to domestic prices at the border. Here, he finds that for manufactured goods, about two-thirds of the international price change passes through to the domestic market, whereas the comparable figure for agriculture is just one-quarter.

Nicita's econometric estimates also show that the transmission of world market price changes diminishes with distance from the border. In addition, urban areas are more sensitive to border prices changes, when compared to rural areas. Therefore, he concludes that in the more remote, rural regions of Mexico, very little of the international price changes will be felt – particularly in the case of agricultural products. As a consequence, the impact of the Doha scenarios – which have only modest impacts on world prices, anyway – are negligible in rural Mexico, except in the North, near the US border, where

rural households see some small gains. Urban consumers face higher food prices and a small decline in unskilled wages as the privileged Mexican position in the US market is eroded by MFN tariff cuts. Thus the urban poor experience small losses.

Nicita also explores the impact of complementary domestic reforms that might increase the degree of price transmission to the rural economy. When combined with productivity-enhancing technical progress such that farmers can take advantage of increased export demands without employing additional inputs, the poor in Mexico experience modest gains from trade reform.

One of the poorest countries in the world, which also has very poor infrastructure and is plagued by high domestic marketing costs, is Mozambique. In fact, recent work by Arndt et al. (2000) estimates producer-consumer margins as high as 300% (cassava). The biggest margins reported in their study are for food products, which tend to dominate both the consumption and production bundles of the poor. So the existence and behavior of these margins is critically important for any poverty study. Chapter 5, authored by Channing Arndt, explores this issue in the context of the Doha Round scenarios for Mozambique. As with the Mexico study, the combination of these marketing margins with modest world price changes means that the impact on household welfare in Mozambique is quite small. Indeed, about one-third of rural households are unaffected by the Doha scenario. The largest rural losses are about one percent of income, with some households experiencing modest gains. The dispersion among urban households is larger, due to the presence of smaller marketing margins. Overall the impact of multilateral trade reform on Mozambique is adverse, as preferences are eroded and prices of imports rise. In his chapter on Vietnam, David Roland-Holst also finds evidence of incomplete price

transmission – in the form of widespread price variation with rural supply prices falling below the national average in 75% of the cases examined. Depending on the magnitude of these marketing margins, the long run poverty reduction under the Doah Agenda can range from 4% to nearly 10%.

5. The Disaggregated Impact on Households

Moving beyond the question of price transmission, we come to the issue of household level impacts of – and household responses to – the price changes ensuing from trade reforms. The simplest way of exploring this link is to focus on a single commodity. This is the approach taken by Jorge Balat and Guido Porto in Chapter 7 on the impact of trade reform on cotton producers in Zambia. They note that the critical factor in this case is the share of household income generated by cotton production. To a first-order approximation, the real income impact of a change in the price of cotton may be obtained by multiplying this income share by the percentage change in cotton price. This leads them to focus on the evolution of cotton income shares amongst the poor in Zambia. Since cotton is only grown in significant quantities in three provinces, this is where they focus attention.

One of the striking things about world cotton markets in the late 1990's was the collapse in world prices. Between 1996 and 1998, cotton prices in Zambia fell by 20 percent. Therefore, it is surprising that cotton's share in income among the poor rose sharply in the Eastern and Southern Provinces over this same period. Indeed, amongst the poorest households in the Eastern Province, the increase was nearly five-fold – even as the income share fell for wealthier households. While there are many factors that may bear on this change, the authors argue that the most likely reason was the reform of the

cotton marketing board system and the implementation of an out-grower scheme which proved effective in getting seed and fertilizer into the hands of credit-constrained, small scale producers. This increase in the cotton share boosts the potential benefits from multilateral agricultural reforms, since one of the main consequences of such reform would be to raise cotton prices.

Despite the increase in cotton income shares over this period, the income impact on the poor of higher cotton prices – the authors assume a 12% price rise, based on several independent studies of world cotton markets – is still relatively modest (on the order of one percent of real income, on average) because the average income share is about 8%. This brings them to a discussion of complementary domestic reforms. In particular, they cite evidence from other research they have conducted in Zambia which finds that access to extension services can boost productivity by more than eight percent, resulting in an aggregate gain of more than nine percent, when combined with higher cotton prices.

But the largest poverty reduction benefits appear to arise when subsistence households switch to cotton production in the wake of increased demand for exports. Here, a careful matching of subsistence and cotton-producing households shows that, all else constant, subsistence producers could boost their incomes by nearly 20 percent if they switched to cotton production. Such a switch would be greatly facilitated by continued improvement of the out-grower schemes and strong demand for cotton exports. When combined with improved extension services and higher cotton prices, the switch from subsistence production to cotton could boost incomes of some of the poorest households in Zambia by nearly one-third. In sum, Balat and Porto conclude that trade

reform alone is not sufficient to raise a large number of poor out of poverty in Zambia, but that when the market opportunities presented by trade reforms are combined with complementary domestic reforms, significant headway in the fight against poverty is possible.

Of course, global trade reforms do not simply alter one single commodity price: rather they potentially affect *all* prices in the economy – including the prices of non-tradeable commodities and services as well as wages and returns to land and capital. So we turn next to a study that seeks to account for the full range of price impacts at a highly disaggregated level. The unusual thing about Joaquim Ferriera-Filho and Mark Horridge's Chapter 8 in this volume is the very large number of individuals considered in their analysis – 264,000 adults who are members of 112,000 households spread across the 27 regions of Brazil. The authors argue that the regional dimension of their study is critical, given the tremendous disparities in income and poverty incidence across regions. The proportion of poor households ranges from about 14% in parts of the Southeast, to nearly 60% in the North (Amapa). When combined with large variations in industrial composition across regions, there is a recipe for great differences in poverty impacts due to trade reform.

The authors find that the Doha scenarios benefit agriculture at the expense of industry. Given the relatively higher concentration of the poor in agriculture, and the relatively greater poverty incidence in agriculture-dependent regions, the ensuing shift in economic activity and employment is beneficial to poverty reduction. As a percentage of initial poverty, the national decline is modest (less than one percent), but it still amounts to a large number of persons. Under the Doha scenarios, poverty falls by about 236,000,

and it declines by about twice that amount in the case of the Full-Lib scenario. The declines in poverty are fueled by the growth in agricultural activity – Brazilian farm and food exports expand strongly in the wake of trade reform – and the subsequent increase in demand for the lowest skill workers, 41% of whom still work in the farm sector.

Of course these wage gains hinge on the existence of an operational labor market. Such a market may not exist in some cases and the potential consequences of factor market failure are explored in considerable depth in Chapter 9 by Marijke Kuiper and Frank van Tongeren. These authors approach this problem by employing a village-level model of a community in Jiangxi Province in China. They capture the heterogeneity of household types by grouping them according to their factor endowments. In particular, they distinguish whether or not households have access to draught power and whether or not they have family members involved in temporary migration outside the province. After a detailed analysis of circumstances in this village, they conclude that the markets for labor, land and capital are imperfect, thereby preventing households from simply taking wages and rental payments as given when making decisions about consumption and production. This "non-separability" complicates the household's decision process and can result in some striking results in the wake of trade reforms as the authors show.

In the case of Doha reforms, the real income gains for the village are quite modest – about 1.2% of income – and relatively evenly spread across the different household groups. However, in the case of full liberalization, the aggregate gains are four times as large, and also much more unevenly spread across households, with the gains to households with draught power nearly twice as large as those for the other household

groups. This reflects the intensification of production in agriculture engendered by higher prices for rice and other farm products.

6. Labor Markets

The main resource with which the poor are endowed is their own labor. Whether they are self-employed farmers, providers of services, or wage earners, their income is closely tied to conditions in the labor market. This point surfaces clearly in the Brazil and China studies discussed above, both of which emphasize the importance of labor markets as a mechanism for transmitting favorable developments in the world marketplace, as well as elsewhere in the domestic economy, to impoverished households. We now turn to a set of studies that focus primarily on the labor markets in Brazil and China, as well as one focusing on a third country – Indonesia. The first of these is Chapter 10 by Maurizio Bussolo, Johan Lay and Dominique van der Mensbrugghe on Brazil. Their focus is specifically on the link between the farm and non-farm labor forces. They model the decision to move out of agriculture based on an econometric model that predicts the likelihood of a given individual changing sectors, based on the historical evidence in Brazil. The other important feature of this paper is that they set their analysis in the context of a 2001-2015 baseline for the Brazilian economy. This permits us to view the impacts of trade reform in the context of ongoing changes in the economy, labor markets and poverty.

In their baseline projection, Bussolo, Lay and van der Mensbrugghe find that the poverty headcount falls by almost 14%. The majority of this decline is due to poverty reduction in agriculture -- a sector which grows considerably faster than the non-farm economy under their business as usual (BaU) forecast. The majority of this poverty

reduction is due to factor price changes (e.g., higher wages), but a significant portion is due to the exit of labor from the relatively low wage agricultural sector to higher wage, non-farm jobs. This intersectoral movement is particularly important to the poorest farm households.

Having established this baseline scenario, the authors analyze the implications of alternative trade reforms for poverty – and in particular for the different labor force groups: the "movers" who move from agriculture to non-agriculture over the course of the baseline, the "stayers" who remain in agriculture, and the "stayers" in non-agriculture. The largest percentage point reduction in poverty over the baseline is for the "movers" who experience a 22.4 percentage point reduction in their headcount (down from 53.4% to 31%). This is the poorest of the three groups, and it is also the group that experiences the greatest incremental poverty reduction, above and beyond the baseline, as a result of the Doha trade reforms. Overall, the authors find quite modest poverty gains from the Doha scenarios (just 3% of the baseline change over the 2001-2015 period). Full liberalization generates estimates of national poverty reduction that are three times as large as the Doha reductions – but still modest in the context of projected baseline changes. This underscores the fact that trade reforms taken alone are a relatively small piece of the overall poverty reduction puzzle.

Chapter 11 by Fan Zhai and Thomas Hertel takes a deeper look at the Doha reforms through the lens of a labor-focused CGE model of China – and the scope for enhancing these outcomes through complementary education reforms. Like the Bussolo et al. paper, this chapter emphasizes the farm/non-farm labor market linkage which the authors argue is partly a function of educational attainment and therefore susceptible to

change through educational policy. They also emphasize the link between rural and urban labor markets in China – through the temporary migration of workers. (Permanent migration is still restricted in that country.) In their analysis of multilateral trade reforms, the authors find that poverty falls across all of their household categories: by 1.3% in the case of Doha-SDT and 2.7% in the case of full liberalization. Inequality also declines slightly under these scenarios.

They cite econometric evidence that suggests that an additional year of education boosts an individual's chances of obtaining an off-farm job in China by 14%. Educational attainment is also important for workers seeking to meet the needs of an increasingly integrated global marketplace. Yet education expenditures per pupil in the rural areas lag significantly behind their urban counterparts in China. So the authors explore the implications of accompanying trade reform with additional educational investments in rural areas to enhance rural labor mobility, productivity and income. In particular, they boost expenditures per pupil enrolled in mandatory education by 16% to reach the comparable urban level. This increment is assumed to be financed in part by public funds, raised through additional taxation, and in part through increased private contributions taken out of rural households' disposable income. This combination of educational and trade reforms has a much stronger impact on poverty alleviation, with the number of poor (living below $2/day) falling by 13.4%. This scenario also has a favorable impact on rural-urban income inequality.

The final chapter focusing on labor markets, Chapter 12, is a case study of Indonesia, authored by Anne-Sophie Robilliard and Sherman Robinson. Instead of focusing on the farm/non-farm or rural/urban movement of labor, these authors draw a

sharp distinction between the formal and informal labor markets. The formal sector offers high wages, but few opportunities for employment. The informal sector, by contrast, has a flexible wage which is assumed to clear the market. Robilliard and Robinson explicitly model each individual's decision to participate in one or the other of these labor markets. In this way, they are able to predict which types of individuals will lose their job when formal sector employment contracts, and which will be hired when employment expands. These changes in employment represent an important determinant of the welfare impacts on households of any change in a country's pattern of trade, production and employment.

Robilliard and Robinson explore the poverty impacts of multilateral trade reform under three alternative labor market closures: fixed aggregate employment and flexible wages, fixed, sector-specific labor (no change in employment by sector), and fixed real wages and variable aggregate employment (i.e. changes in unemployment are permitted). They focus on the full liberalization scenario for this sensitivity analysis and find that the largest reduction in poverty comes from the fixed employment scenario – about 1.4 million people are lifted out of poverty. The proportional reduction is slightly higher in the rural areas and more favorable to the poorest of the poor as well, so that the national Gini index falls in this closure. When labor is not permitted to move across sectors, the poverty reduction is much smaller – only 900 thousand: because the economy is not permitted to fully adjust to the new world prices, efficiency gains are blunted and the national rise in per capita income is muted.

The third case, in which wages are fixed and the unemployment rate is permitted to fall in the wake of increasing labor demand, presents a particularly interesting contrast in this chapter. With increasing aggregate employment, national per capita income rises

more than in the first case with fixed employment and flexible wages, but the impact on poverty is somewhat less favorable. The authors have estimated the likelihood of each unemployed individual obtaining a job, and their model predicts that the new jobs will go disproportionately to individuals from non-poor households, i.e. families with other wage earners or other sources of income. This bias towards the non-poor worsens urban income inequality since the pool of unemployed workers prevents unskilled wages from rising and, without the benefit of higher wages, poverty reduction is muted – despite the greater rise in per capita national income.

7. Interactions with Tax Policies

An important theme in many of the chapters in this volume is the potential for interactions between the Doha scenarios and domestic policies to alter the poverty outcomes obtained from multilateral trade reform. Does multilateral trade liberalization lessen the distortions introduced by domestic commodity and factor market policies, or does it exacerbate them? To what extent can complementary reforms of domestic policies enhance the degree of poverty reduction? When trade liberalization results in reduced tax revenues, how will this shortfall be made up? Two of the chapters in this volume focus squarely on the question of tax replacement. Chapter 13 by Christian Arnault Emini, John Cockburn and Bernard Decaluwe focuses on the case of Cameroon. Here, the poverty head count has fallen sharply since the mid-1990's, when major policy reforms were undertaken. Preliminary analysis suggests that trade reforms – more specifically the devaluation of the CFA franc – contributed positively to this poverty reduction.

Emini et al. proceed to examine the poverty impacts of the potential Doha scenarios using this same modeling framework. They pay particular attention to the

structure of the domestic tax system and the different options available for replacement of the lost tariff revenue. They view the Value-Added Tax (VAT) as the most likely tax replacement tool in Cameroon. This tax has a very heterogeneous impact on sectors, with effective rates ranging from very low in the case of agriculture, to much higher in the case of manufactures. When they combine this tax replacement tool with the Doha-SDT scenario, they find that poverty falls slightly in Cameroon, as does inequality. In contrast, full liberalization has a very small poverty increasing impact. However, when they use a an income tax which is applied uniformly across all sectors, instead of the VAT, full liberalization increases the poverty headcount by more than two percentage points – nearly a five percent rise in the number of people below the poverty line (check against the revised paper). In this case, the choice of tax instrument used to replace the lost tariff revenue is more important than the type of trade liberalization (full liberalization vs. Doha reforms).

A second chapter focusing on the issue of tax replacement, Chapter 14, is by Caesar Cororaton, John Cockburn and Erwin Corong on the Philippines, where the agriculture sector has evolved from net exporter to net importer over the past three decades. As a net food importer there is widespread concern in the Philippines that trade reforms will jeopardize food security. However, in their analysis of the Doha scenarios, the authors find that the national poverty headcount is barely affected. There is a small rise in poverty among the self-employed households – particularly those in rural areas, while poverty amongst salaried urban workers falls. Unlike many of the focus economies in this volume, the Doha reforms are not favorable to Philippine agriculture, and this effect is more pronounced under full liberalization. Because of the relatively high

protection for Philippine agriculture presently, full liberalization results in a contraction of the agricultural sector and an increase in rural poverty. This is offset by a reduction in poverty amongst the urban population, where wages rise. As a consequence, there is a small decline in the national poverty headcount. However, when the authors switch from the VAT to a uniform income tax for purposes of tariff replacement, poverty rises under the full liberalization case. Once again, the pattern of exemptions in the indirect tax system favors the poor, and its use for purposes of tax replacement is a critical piece of the poverty puzzle.

8. Cross-Country Comparisons

With their differences in factor market closures, elasticities of substitution, methodologies for grouping households and modeling labor markets, etc., the country case studies used up to this point have been non-comparable. This makes it difficult to generalize on the basis of cross-country comparisons. Therefore, in Chapter 15 by Maros Ivanic we feature a cross-country comparison for 15 countries – each of which has been treated in a symmetric manner. And while this approach is somewhat stylized, and therefore less definitive for any given country, each of the focus country data bases has been built up from the same types of individual household surveys as the single country case studies. Another virtue of this chapter is that is offers a fully integrated, global/national/micro modeling approach. In particular, Ivanic has modified the GTAP global CGE model to incorporate 140 disaggregated household groups for each of the 15 focus countries. His grouping is based on income specialization, e.g., agriculture-specialized households rely almost entirely on agricultural self-employment for their

income, and similarly for a wage-specialized stratum, etc. Because his is a fully integrated model, he can simulate all of the trade reform scenarios directly in his model, which also facilitates further decomposition of the elements of trade reform and their poverty impacts.

Ivanic's findings with respect to the poverty impacts of the Doha Agenda are particularly interesting. Specifically, he finds that the Doha trade reform scenarios are not as poverty-friendly as the global liberalization scenario. Specifically, poverty falls in only 40% of his countries under Doha-SDT, vs. 67% of the countries in the Full-Lib scenario. Now, if Doha-SDT represented the same mix of policy reforms as full liberalization, we would expect both simulations to have the same pattern of poverty reduction but with larger cuts under Full-Lib because of its deeper cuts in protection (e.g., 100% vs. 33%). However, this is not the case, and, in a decomposition analysis, Ivanic shows why.

The Doha Agenda as outlined in Chapter 2 has a variety of different elements, and these have conflicting impacts on poverty. The removal of export subsidies in the EU and the USA tends to raise poverty in most of the developing countries in Ivanic's sample – even while reducing poverty amongst the agricultural households in these poorer countries. And these subsidies are fully removed under Doha-SDT, so this impact is fully realized under that partial reform scenario. On the other hand, Ivanic finds that cuts to developing country tariffs have a very favorable impact on national poverty in other developing countries. Yet there is very little reform of developing country tariffs under Doha-SDT – firstly due to Special and Differential Treatment, and secondly due to the extensive binding overhang in developing countries. For this reason, very little of the beneficial impact of these reforms is felt under the Doha scenario. When combined, these

facts explain why Doha is less poverty-friendly than the comprehensive reform scenario. It accentuates those aspects of reform that adversely affect poverty (export subsidies), while largely omitting those aspects that benefit the poor.

A second finding from Ivanic's cross-section analysis pertains to the common assumption that "a rising tide lifts all boats", i.e., that poverty rises and falls in concert with changes in national per capita income. Ivanic shows that this is not always the case in the near term. The reason is that trade reform generates uneven gains in the economy. One sector gains and another loses, so it matters greatly where the poverty is concentrated. If most of the poor reside in agriculture, and agriculture is hurt by trade reform, poverty may rise, even if real national income rises. This is the case in Malawi, where 40% of the population is specialized in agricultural self-employment.

9. Effects on Productivity and Economic Growth

Sustained reductions in poverty require economic growth, which leads naturally to the question of how a prospective Doha Development Agenda might affect the growth rates of countries currently experiencing the highest levels of poverty. This is a challenging area of research – worthy of an entire conference in its own right – but the final section of this book offers two country case studies and a global synthesis chapter oriented towards this theme.

Chapter 16 by Thomas Rutherford, David Tarr and Oleksandr Shepotylo explores one of the key trade/growth linkages in the case of Russia. They focus particularly on the potential for international trade and foreign direct investment in the services sector to bring new varieties of goods and new technologies to Russia, thereby enhancing her

productivity, generating economic growth, and lifting households out of poverty. The role of services sector reforms – an important aspect of future WTO agreements – is often neglected in analyses of trade and poverty. The chapter begins by analyzing the Doha-SDT scenario explored by other authors. The impact of this scenario is mixed, but most of the households experience a small welfare loss. The Full-Lib scenario shifts the distribution of welfare impacts in the positive direction, so that most households now gain and poverty falls, but again the changes are quite modest.

The authors then turn to domestic reforms in the services sectors – a part of the economy that the Doha Agenda is not expected to affect to any great degree, but an area which is currently receiving a great deal of attention in the context of Russia's WTO accession negotiations. The authors show that the liberalization of barriers to Foreign Direct Investment (FDI) greatly enhances the potential welfare gains. The main vehicle for this enhancement is the provision of new varieties of services, which improve productivity, not only in the services sector, but also in services-using sectors as well. Indeed, the added productivity boost from the elimination of services FDI barriers alone is sufficient to generate per capita income increase of 5.3%, ensuring that virtually all Russian households benefit from the reform. There are two lessons to be drawn from this work. First, productivity growth is essential for generating widespread gains from trade reforms, and second, one way of obtaining such growth is through ambitious services sector reforms, such as those that have been a part of recent WTO accession negotiations – most notably in China, but also now in Russia.

Chapter 17 on Bangladesh focuses on the growth question by emphasizing the impact of trade reform on capital accumulation. Nabil Annabi, Bazlul Khandker, Selim

Raiham, John Cockburn and Bernard Decaluwe begin with a short run analysis in which they find that Bangladesh experiences an aggregate loss, as well as a small rise in poverty under the Doha scenario. These adverse consequences are the result of two factors. First, Bangladesh is a net agricultural importer and suffers particularly from higher prices for cotton, wheat and oilseeds. Second, as one of the Least Developed Countries (LDCs), Bangladesh currently enjoys tariff free access into many of the rich country markets. When tariffs in these markets fall, she suffers from "preference erosion", i.e. the value of these tariff preferences diminishes. Both of these losses are magnified under full liberalization. To these losses must be added another adverse terms of trade effect. To compensate for preference erosion and higher import prices, Bangladesh must expand the volume of her textile and apparel exports – which account for nearly eighty percent of export revenues. This further depresses their prices.

However, these short run losses are transitory and Annabi et al. estimate that after 2 – 3 years, the economy will be better off under Full-Lib than under the business as usual scenario. The reason is that the cost of investment goods will fall and increased investment will flow to the more competitive sectors, thereby stimulating additional growth. They estimate that in the long run (15 years) GDP will be 1.44% higher and poverty 6.1% lower under the Full-Lib scenario. A closer look at these results reveals that most of the stimulus for the increased investment and economic growth comes from the reduction in Bangladesh's own tariffs, which would be missing under the Doha-SDT scenario.

These authors also explore an issue that has received quite a bit of discussion recently in the context of the WTO: the temporary migration of workers. They formally

explore the implications of a fifty percent increase in the flow of temporary workers, and hence in the associated remittances of earnings back to Bangladesh. This has a favorable impact on poverty, reducing it by 0.8% in the short run and 4.0% in the long run. To the extent that rich countries are concerned about the impact on Bangladesh of higher food prices and preference erosion, a policy which permitted increased temporary migration would be a good way to offset some of these negative effects, as the benefits of increased remittances dominate the short run costs of trade liberalization.

The final chapter in the book provides an integrated, global analysis of the potential for multilateral trade reforms to reduce poverty in the long run (2015). In this chapter, Kym Anderson, Will Martin and Dominique van der Mensbrugghe utilize the latest version of the World Bank's Linkage model, along with the same GTAP data set used in chapters 3 and 15, to project the growth path of the global economy from 2001 to 2015. They find that trade reforms have a modest impact on capital accumulation and thereby boost the projected global gains from multilateral trade reform by about one-quarter. However, they devote most of their attention to the potential impacts of increased trade on productivity growth. (It should be noted, however, that the authors focus entirely on productivity growth associated with increased manufactures exports – not services trade or investment as with the Russia study).

There is now a rapidly growing literature on the impacts of trade and trade policy reforms on productivity and Anderson, Martin and van der Mensbrugghe draw on this in their chapter. When they incorporate the additional impact of openness on labor productivity, they find a substantial boost to the global gains (40% larger gains in 2015) with a disproportionate share accruing to the South and East Asia developing economies.

The poverty impacts of these alternative scenarios are elicited by first estimating the income gains to the poorest households and then applying to this an estimated elasticity of poverty reduction with respect to income growth at the poverty line. Instead of using real per capita income for the region as a whole, they use the unskilled wage rate, deflated by an index of food and clothing prices, reflecting the dual facts that the main endowment of the poor is their own labor, and they spend the bulk of their income on non-durable goods. Another critical assumption is that the poor do not pay taxes, so that any increase in taxes required to offset forgone tariff revenues does not affect them.

Applying these estimates of earnings at the poverty line to the poverty elasticity of income in each region – which varies depending on the distribution of income in each region – the authors predict the extent of poverty reduction in developing countries. Of course, this depends on the poverty line. For $1/day poverty, the estimated reduction is 4.5 million for Doha-SDT and 40 million for Full-Lib. For $2/day poverty, the reduction in number of poor is 9 million for Doha-SDT and 79 million for Full-Lib. Thus, it appears that the (rather ambitious) Doha scenarios capture only a relatively small portion of the total poverty reduction possible under trade reforms. This reinforces Ivanic's finding with respect to the poverty impacts of these alternative scenarios.

Another important finding from the Anderson, Martin and van der Mensbrugghe chapter relates to sensitive and special products. Some have proposed that such products be exempt from steep tariff reductions, facing instead just a 15% cut in bound tariffs. Of course it goes without saying that such products invariably have the highest tariffs, so that exempting them can make a big difference in the results. Indeed, the authors find that merely introducing such an exemption for a maximum of 2% of the tariff lines virtually

eliminates the poverty impacts of a Doha agreement. Therefore, in order to have a significant poverty impact, the Doha Agenda must not only have ambitious numerical targets, it must also seek to limit – indeed eliminate – the use of sensitive and special product exemptions.

10. Summary and Conclusions

As noted previously, the approach taken in this book ensures consistency of methods in the global analysis of each of the multilateral trade reform scenarios – and also in the methodology for incorporating these results into the national analyses. However, at the country level, different authors have had the liberty to take a variety of approaches depending both on the particular circumstances facing their countries, and their own analytical interests. This is why we have two studies of the Brazilian economy – one of which focuses on near term impacts across heterogeneous individuals, households and regions in Brazil, and one of which focuses on longer terms impacts – particularly in light of the barriers to inter-sectoral labor mobility. In the case of China, we have one study which focuses on market failure at the village level, and another of which focuses on labor mobility at the national level. Similarly there are differences in methodology taken across countries, with a mix of partial and general equilibrium approaches, as well as both static and dynamic frameworks featured. Even the poverty lines chosen in each of the studies are not the same. Their findings, therefore, are not strictly comparable. Finally, since the choice of countries to include in this volume was made on the basis of pre-existing work that laid a foundation for the current research

project, this is not a random sample of developing countries. With these qualifications in mind, let us turn to an overview of the findings.

Table 1.1 summarizes the poverty results from each of the studies that is national in scope (sub-national studies are not reported here) for both the Doha-SDT and Full-Lib scenarios, distinguished by length of run for the analysis. The long term studies factor in the impact of trade policy on investment and capital accumulation – and in the case of the global analysis, productivity as well, whereas the short term studies do not. The national poverty changes are reported in two different ways – first as the change in number of persons in poverty, and second as the percentage change in the poverty headcount. Thus a negative number in Table 1.1 means that the number of poor has fallen as a result of multilateral trade reform, while a positive number indicates that the number of poor has risen.

Table 1.1 suggests several tentative conclusions. First, the near term analyses are mixed in terms of their outcomes, with poverty rising in some cases and falling in others. The number of countries where poverty declines under the Doha scenario is about the same as the number of countries where it falls. However, looking at the absolute number of poor, we see that poverty declines in several of the most populous countries (Brazil, China and Indonesia) and therefore declining as a whole in this non-random sample of countries.

Turning to the long run results, we see that all of the studies that consider the impact of trade on capital accumulation and/or productivity predict a reduction in poverty (with the exception of Doha-Bangladesh, where there is no long run measurable impact). Clearly trade stimulates investment, investment stimulates growth and growth reduces

poverty. When productivity impacts are also considered (bottom two rows), this effect is even stronger. This short run/long run distinction is particularly striking in the case of the Full-Lib scenarios for Bangladesh, where the short run impacts of trade reform translate into a rise in headcount poverty, while the long run impacts of trade reform suggest a substantial decline.

In addition to the quantitative summary reported in Table 1, the research documented in this book has generated some additional insights. First, the liberalization targets under the DDA have to be quite ambitious if the round is to have a measurable impact on world markets and hence poverty. Assuming an ambitious DDA, we find the near-term poverty impacts to be mixed; some countries experience small poverty rises and others more substantial poverty declines. Key determinants of the national poverty impacts include: the incomplete transmission of world prices to rural households, barriers to the mobility of workers between sectors of the economy, and the incidence of national tax instruments used to replace lost tariff revenue.

In order to have a significant near term impact on poverty, complementary domestic reforms are required to enable households to take advantage of market opportunities created by the DDA. These include improved infrastructure and the reform of domestic marketing institutions to improve price transmission to rural areas, rural education reform to enhance labor mobility between the farm and non-farm sectors, and extension outreach to permit farmers to take advantage of new export opportunities opened up by the DDA.

Of course, sustained poverty reduction depends on stimulating economic growth. Here, the impact of the DDA on productivity is critical. Empirical evidence suggests that

increased merchandise trade will likely bring with it productivity gains through disciplinary effects on domestic firms as well as learning-by-doing on the export side. However, in order to fully realize potential productivity gains, trade reforms need to be far reaching and should include reducing barriers to services trade and investment in addition to merchandise tariffs. Only through such comprehensive reforms can long term growth and poverty reduction be ensured.

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Table 1.1a. Poverty Impacts of a Prospective Doha Development Agenda (Doha-SDT): Change in Poverty Headcount (thousands of people)

	Near Term: Fixed Capital		Long Term: Investment Impacts	
	Doha-SDT	Full-Lib	Doha-SDT	Full-Lib
Bangladesh (17)	38	1,354	0	-5758
Brazil (8:FH)	-236	-482		
Brazil (10:BLM)			-380	-1,030
Cameroon (13)	-51	118		
China (11)	-4,590	-8,271	-5,378	-11,170
Indonesia (12)	-48	-1,384		
Mexico (4)	4	127		
Mozambique (5)	27	60		
Philippines (14)	12	-7		
Russia (16)	209	-122		
Vietnam (6)			-2,273	-5,214
All Developing (18)				
$1/day		-22,500	-3,300	-35,800
$2/day		-54,000	-6,700	-70,500
			Productivity Effects Added	
$1/day			-4,500	-40,200
$2/day			-9,000	-79,400

Table 1.1b. Poverty Impacts of a Prospective Doha Development Agenda (Doha-SDT): Change in Poverty Headcount (percentage change in headcount)

	Fixed Endowments and Productivity		Variable Endowments and/or Productivity	
	Doha-SDT	Full-Lib	Doha-SDT	Full-Lib
Bangladesh (17)	0.3	1.1	0	-4.6
Brazil (8:FH)	-0.4	-0.8		
Brazil (10:BLM)			-1.1	-2.9
Cameroon (13)	-0.8	1.9		
China (11)	-1.1	-2.0	-1.3	-2.7
Indonesia (12)	-0.1	-3.5		
Mexico (4)	0.0	1.0		
Mozambique (5)	0.3	0.6		
Philippines (14)	0.0	0.0		
Russia (16)	0.9	-0.5		
Vietnam (6)			-9.3	-22.8
All Developing (18)				
$1/day		-3.6	-0.5	-5.8
$2/day		-2.8	-0.3	-3.6
			Productivity Effects Added	
$1/day			-0.7	-6.5
$2/day			-0.5	-4.1